

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Siddhartha GAUR *et al.*

Art Unit :

Serial No.:

Examiner :

Filed :

Confirmation No.:

Title : CARBON ALLOY AND A PROCESS FOR THEIR PRODUCTION

Mail Stop: Patent Application

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

22511

PATENT TRADEMARK OFFICE

**PRELIMINARY AMENDMENT**

**Introductory Comments**

The present application is a continuation of a prior application in which the Examiner considered the terminology used by applicants to refer to their inventive materials, namely “carbon alloys” to be confusing and required applicants to change their chosen terminology from “carbon alloys” to an alternative term “carbonaceous materials.” Subsequent to complying with the requirement, applicants found a newly published book titled *CARBON ALLOYS – Novel Concepts To Develop Carbon Science And Technology*, published by Elseier Science 2003) and edited by respected scientist in the field of carbon research and in which the editors indicated a proposed definition for a new field of study of materials to be known as “carbon alloys.” The proposed definition is as follows:

***“Carbon alloys are materials mainly composed of carbon atoms in multi-component systems, in which each component has physical and/or chemical interactions with each other. Here, carbons with different hybrid orbitals account as different component.”***

It is deemed that as applicants’ inventive process and the resulting materials fall

within the proposed definition that has now been published. As such the present continuation application has been submitted with the term carbon alloy reasserted as the appropriate descriptive term for the category of materials of the inventive products and process that the examiner previously required applicants to call “carbonaceous materials”.

It is further respectfully submitted that as the Examiner has considered applicants prior application as meeting the requirements of section 112 for showing that applicant was in possession of the invention and taught the invention so as to enable one skilled in the art to make and use the invention, for at least one process for making a specific carbonaceous material (carbon alloy) i.e., a specific embodiment of the claimed invention), the specification should also be deemed adequate for the purposes of other more generic claims to the method of making carbonaceous materials (carbon alloys.) It is respectfully submitted, that, although the combination as claimed provides a novel technology, those skilled in the art, upon reading the disclosure, will be able to understand how to implement the individual steps of the process to thereby make and use the invention. Those skilled in the art will know how to find and read thermograms like the ones presented in the application and for the purposes and results as taught and claimed by applicants. The previous rejections under 35 USC § 112, should be withdrawn to the reasserted claims just as the rejection was reconsidered and withdrawn with respect to the previously issued claim in the predecessor application.

For these reasons applicants have reasserted the prior pending claims with the term carbon alloy appropriately reasserted in place of carbonaceous material as discussed above. It is respectfully submitted that the previously cited references directed to the

manufacture of graphite do not teach disclose or suggest applicants' claimed invention.

Applicants have also replaced the trademark Teflon in the continuation specification and claims with the common generic materials "polytetrafluoroethylene (PTFE) and tetrafluoroethylene (TFE)." The trademark Carbowax has been replaced with the term "paraffin."

Applicants further respectfully submit that there are sufficient teachings in the application for those skilled in the art to know that applicants possessed the invention claimed at the time of the application and that such persons skilled in the art would know how to practice the invention as taught in the application and as specifically claimed. For example, to address one specific possible concern set forth in the Office Action, those of skill in the art will know what is meant by adjusting reactivity where it is taught that doing this can be accomplished by controlling the rate of heating in a range of 1°C/min to 1000° C/min to adjust reactivity of said active nucleation sites. Applicants teach this step generally at page 8, and more specifically at page 10 with reference to Fig. 8. The application provides kinetic rate equations at page 10 and explain with reference to Fig. 8 how the reactivity is affected by the heating rate within the claimed range. Based upon applicants' teaching those skilled in the art would be enabled to use the steps described. To the extent that adjusting reactivity is known by others, the novel concept of including such a step in the claimed process is nevertheless deemed not obvious.

It is also respectfully submitted that, the characteristics of materials that may be used as feed modifiers, as taught by applicants, can be understood and how they modify the feed namely nucleation enhancers, fluidity enhancers and strength enhancers is explained in the application. Various specific materials for these purposes are taught in

the specification. In addition to the generalized process for various carbonaceous materials as might be produced with the process taught generally, the specification teaches specific steps for producing such materials. Specified groups of feed and feed modifier materials that may be used for purposes of the invention and how to select them based upon available information and knowledge known to those skilled in the art are also taught. For example, the steps for adding fluidity enhancers and for adding strength enhancers, are taught and the specification teaches various specified groups of materials to be used for the indicated purposes. Even though those skilled in the art once taught what steps to perform will know from applicants' teachings how to perform the individual steps of the combination, the combination of steps of the invention is nevertheless novel.

It is respectfully submitted, that although the combination as claimed provides a novel technology, those skilled in the art, upon reading the disclosure, will be able to understand how to implement the individual steps of the process to thereby make and use the invention. Those skilled in the art will know how to find and read thermograms like the ones presented in the application and for the purposes and results as taught and claimed by applicants. The previously asserted rejections under 35 U.S.C. § 112, should not be applicable to the continuation application.

Other modifications to the specification have been made without changing the substance of the disclosure to avoid use of registered trademarks (as recognized by the Examiner) and to correct grammar where applicants detected errors upon review.

**PREVIOUS REJECTIONS:**

Substantive grounds of rejection based upon cited art are traversed for the reasons as set forth below:

It is deemed that neither U.S. Patent No. 5,95,375 to Zondlo *et al.* (“Zondlo”) nor U.S. Patent No. 4,213,956 to Ubbelohde (“Ubbelohde”) teach all of the steps of the processes claimed.

**35 U.S.C. § 102**

The PTO provides in MPEP § 2131 that

“[t]o anticipate a claim, the reference must teach every  
element of the claim...”

For the *Zondlo* patent or the *Ubbelohde* patent to be applied to sustain a rejection under 35 U.S.C § 102 (b) they must contain all of the claimed elements of the claims. However, both *Zondlo* and *Ubbelohde* teach a process for making a different end product, namely graphite. Each of the references teach different methods with different steps for obtaining graphite.

*Zondlo* teaches separating carbon from similar carbon sources using solvent extraction and selecting homogeneous portions of the extracted carbon material that upon heating to about 3000 ° C forms a homogeneous graphite. Not all the specific process steps as claimed in the independent claims 1, 31, 61, 73, 98, 110, and 111 or in the claims depending from the independent claims are presented by *Zondlo*. The missing steps are not taught in *Zondlo*, and the missing steps are not suggested because the purpose and end result in *Zondlo* is to produce graphite. For example, *Zondlo* does not teach a

process or a material formed by a process at a temperature less than the melting point of carbon. Therefore, a rejection under § 102 (b) is not supported by the *Zondlo* reference.

*Ubbelohde* teaches separating carbon from similar carbon sources using solvent extraction and selecting homogeneous portions of the extracted carbon material that upon heating to about 3000 ° forms a homogeneous graphite. Not all the specific process steps as claimed in the independent claims 1, 31, 61, 73, 98, 110, and 111 or in the claims depending from the independent claims are presented by *Ubbelohde* and missing steps not taught in *Ubbelohde*, and the missing steps are not suggested because the purpose and end result in *Ubbelohde* is to produce graphite. For example, *Ubbelohde* does not teach a process or a material formed by a process at a temperature less than the melting point of carbon. Therefore, a rejection under § 102 (b) is not supported by the *Ubbelohde* reference.

### **35 U.S.C. § 103**

The claims are not obvious in view of *Zondlo*, *Ubbelohde* or other art of record. Neither the *Zondlo* patent nor the *Ubbelohde* can be applied to reject the claims under 35 U.S.C. § 103 which provides that:

A patent may not be obtained... if the differences  
between the subject matter sought to be patented and the  
prior art are such that the subject matter as a whole would  
have been obvious at the time the invention was made to a  
person having ordinary skill in the art to which the subject  
matter pertains... (Emphasis added)

Thus, when evaluating a claim for determining obviousness, all limitations of the

claim must be evaluated. However, since neither *Zondlo* nor *Ubbelohde* disclose teach or suggest all of the steps in the independent claims 1, 31, 61, 73, 98, 110, and 111 or in the claims depending from the independent claims, it is impossible to render the subject matter of the claims as a whole obvious, and the explicit terms of the statute cannot be met.

Moreover, neither the *Zondlo* patent nor *Ubbelohde* would make applicants' invention obvious if modification of the *Zondlo* teachings or the *Ubbelohde* teachings to obtain applicants' invention would destroy the intended function of *Zondlo* or *Ubbelohde*. More particularly, if *Zondlo* were to produce a carbon alloy according to applicants' claim 111 the functions of *Zondlo* and of *Ubbelohde* to obtain improved graphite materials would be destroyed.

Thus, since this modification of the *Zondlo* or the *Ubbelohde* patents according to applicants' claimed process clearly destroys the purpose or function, one of ordinary skill in the art would not have found a reason to make modifications consistent with applicants' claims.

Thus, for these reasons, rejection under 35 U.S.C. §103 should not be found under either the *Zondlo* patent or the *Ubbelohde* patent.

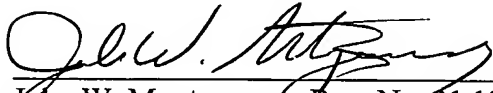
**Conclusion:**

The application as submitted is in a condition for allowance on all of the claims and favorable action and passage of the application to issue are respectfully requested.

The Commissioner is hereby authorized to charge any deficiency in fees associated with this amendment and any papers submitted herewith or to credit any over payment to Deposit Account No.: 50-0591; (Reference Client/Matter No.: 17133.002002).

Respectfully submitted,

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